
Isotope Geology. *Kalervo Rankama.* McGraw-Hill Book Company, New York. 1954. xvi+535 pp. \$12.00.

While the author presently occupies a position as Research Professor of Mineral Chemistry at the University of Helsinki, he is well known in the United States, having been associated with the University of Chicago within recent years. He has coined the expression "isotope geology" to cover the applications of nuclear research to "geology," without restraint as to what can be included under this term. In fact, he includes illustrations involving geochemistry, geophysics, mineralogy, crystallography, petrology, petrography, paleoclimatology, stratigraphy, and even certain aspects of biophysics and biochemistry for the purpose of interrelating the earth sciences to recently acquired knowledge in chemistry and physics.

The first part of the book, "Physics and Chemistry of Nuclides," discusses the concepts of radioactivity, analytical methods for determination of isotopes, nuclear reactions, and applications of radioactivity to the solution of geological problems. These first ten chapters consider fundamental principles and general applications that are discussed more specifically in the second part, where extensive data are supplied as well as interpretations and conclusions.

Part II, "Natural Science of Nuclides," devotes separate chapters to the natural isotopes, their abundance, the possibility of fractionation by biochemical or geochemical processes, the use of the unstable isotopes for determination of age, etc. This part (pages 151-426) comprises chapters 11-91. Short-lived, artificial isotopes, such as ^{30}P , are not considered in detail because of the limitations of the treatment, but certain heavy isotopes, such as those of Am and Cm, are mentioned because of their possible existence in uranium minerals.

Two appendices (numerical constants and conversion factors and international atomic weights for 1953), a bibliography (pages 433-477), an index of authors, and a subject index (pages 489-535) complete the book.

Considering the newness of the background of knowledge which forms the basis for this book, it becomes almost impossible to obtain an appraisal within a true perspective. Thus the reviewer—like the author—can merely approach the subject "with an unprejudiced mind," and assume that, regardless of minor flaws in the data and the consequent possibility of need for revision of tentative conclusions, the author has performed an outstanding service for scientists in general, but particularly those concerned with earth sciences. The publishers are to be commended for the quality of the materials and workmanship that have gone into this book, at the same time holding the price within reason for a work of this scope.

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